

AMENDMENTS TO THE CLAIMS:

1. (Original) A method of forming a P-N junction within a semiconductor substrate, comprising:

forming a coating comprising a dopant over a surface of the semiconductor substrate; and

heating the semiconductor substrate to cause a portion of the dopant to diffuse from the coating into the semiconductor substrate and thereby form a P-N junction within the semiconductor substrate;

wherein the semiconductor substrate comprises a single crystal;

prior to heating, the single crystal comprises a semiconductor that forms the majority of the crystal and an impurity atom that forms a part of the crystal and is distributed primarily within a layer of the crystal adjacent the surface;

the impurity atom has a dose of at least about 1×10^{13} atoms/cm² within the layer;

the semiconductor has an interstitial form; and

at 1000° C, the impurity atom is a faster diffusing species relative to silicon atoms.

2. (Original) The method of claim 1, wherein prior to heating, the impurity atom has a dose of at least about 1×10^{14} atoms/cm² within the layer.

3. (Original) The method of claim 1, wherein the impurity atom is fluorine.
4. (Previously Presented) The method of claim 1, wherein after heating 90% of that portion of the dopant that has diffused into the semiconductor substrate is located within about 50nm from the surface of the semiconductor substrate.
5. (Original) The method of claim 1, wherein the dopant is boron.
6. (Original) The method of claim 1, where after heating the concentration of the dopant within the substrate adjacent the surface is at least about 1×10^{19} atom/cm³.
7. (Original) The method of claim 1, wherein the coating comprises a silicate glass.